

WHAT IS CLAIMED IS:

1. A sol which particles are dispersed in a medium, wherein the particles have a particle size of 0.005 to 1  $\mu\text{m}$  and comprise as a main component crystalline cerium oxide of the cubic system and as an additional component a lanthanum compound, neodymium compound or a combination thereof, wherein the additional component is contained in  $X/(Ce + X)$  molar ratio of 0.001 to 0.5 in which X is lanthanum atoms, neodymium atoms or a combination thereof.
2. A sol according to claim 1, wherein the additional component is a lanthanum compound.
3. A sol according to claim 1, wherein the additional component is a neodymium compound.
4. A process for producing a sol which particles are dispersed in a medium, wherein the particles have a particle size of 0.005 to 1  $\mu\text{m}$  and comprise as a main component crystalline cerium oxide of the cubic system and as an additional component a lanthanum compound, neodymium compound or a combination thereof, wherein the additional component is contained in  $X/(Ce + X)$  molar ratio of 0.001 to 0.5 in which X is lanthanum atoms, neodymium atoms or a combination thereof, characterized in that the process comprises the steps:  
a first step of reacting an aqueous solution which a cerium (III) salt is mixed with a lanthanum (III) salt, a neodymium (III) salt or a combination thereof in an aqueous medium in  $X/(Ce + X)$  molar ratio of 0.001 to 0.5, with an alkaline substance in  $(OH^-)/(Ce^{3+} + X^{3+})$  molar ration of 3 to 30 to give a suspension in which cerium (III) hydroxide and a hydroxide of the trivalent additional component X are homogeneously mixed; and  
a second step of blowing oxygen or a gas containing oxygen into the suspension at a temperature of 10 to 95°C.
5. A process for producing according to claim 4, wherein the first step is carried out under open to the air.
6. A process for producing according to claim 4, wherein the first step is carried

out under an atmosphere of an inert gas.

7. A process for producing according to claim 4, wherein the cerium (III) salt is cerium (III) nitrate, ammonium cerium (III) nitrate, cerium (III) sulfate, ammonium cerium (III) sulfate, cerium (III) chloride, cerium (III) carbonate, cerium (III) acetate, cerium (III) oxalate or a mixture thereof.

8. A process for producing according to claim 4, wherein the lanthanum (III) salt is lanthanum (III) nitrate, lanthanum (III) chloride, lanthanum (III) acetate, lanthanum (III) oxalate or a mixture thereof.

9. A process for producing according to claim 4, wherein the neodymium (III) salt is neodymium (III) nitrate, neodymium (III) chloride, neodymium (III) acetate, neodymium (III) oxalate or a mixture thereof.

10. An abrasive containing a sol which particles are dispersed in a medium, wherein the particles have a particle size of 0.005 to 1  $\mu\text{m}$  and comprise as a main component crystalline cerium oxide of the cubic system and as an additional component a lanthanum compound, neodymium compound or a combination thereof, wherein the additional component is contained in  $X/(Ce + X)$  molar ratio of 0.001 to 0.5 in which X is lanthanum atoms, neodymium atoms or a combination thereof.

11. An abrasive containing a sol which particles are dispersed in a medium, wherein the particles have a particle size of 0.005 to 1  $\mu\text{m}$  and comprise as a main component crystalline cerium oxide of the cubic system and as an additional component a lanthanum compound, neodymium compound or a combination thereof, wherein the additional component is contained in  $X/(Ce + X)$  molar ratio of 0.001 to 0.5 in which X is lanthanum atoms, neodymium atoms or a combination thereof, characterized in that the sol is produced according to the steps:

a first step of reacting an aqueous solution which a cerium (III) salt is mixed with a lanthanum (III) salt, a neodymium (III) salt or a combination thereof in an aqueous medium in  $X/(Ce + X)$  molar ratio of 0.001 to 0.5, with an alkaline substance in  $(OH^-)/(Ce^{3+} + X^{3+})$  molar ration of 3 to 30 to give a suspension in

which cerium (III) hydroxide and a hydroxide of the trivalent additional component X are homogeneously mixed; and  
a second step of blowing oxygen or a gas containing oxygen into the suspension at a temperature of 10 to 95°C.

12. An abrasive according to claim 10 or 11, wherein the additional component is a lanthanum compound.

13. An abrasive according to claim 10 or 11, wherein the additional component is a neodymium compound.

14. An abrasive according to claim 10 or 11, which is adjusted with an acidic substance to a pH of 1 to 6.

15. An abrasive according to claim 10 or 11, which is adjusted with a basic substance to a pH of 8 to 13.

16. An abrasive according to claim 10 or 11, which is used for polishing a substrate which comprises silica as a main component.

17. An abrasive according to claim 10 or 11, which is used for polishing a rock crystal, a quartz glass for photomask, a semiconductor device or a hard disk made of glass.

18. An abrasive according to claim 10 or 11, which is used in a step of polishing an organic film, a step of polishing Inter Layer Dielectric (ILD) or a step of shallow trench isolation, for polishing a semiconductor device.